

# **The Effect of Walking Aids on Balance**

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## **Background and Purpose**

Standard and quad canes are often prescribed to patients with hemiparesis, yet their effect on postural control remains unclear. Thus, the objective of this study was to examine the effects of standard and quad canes on postural sway and on weight-bearing patterns in patients with hemiparesis.

## **Subjects**

Thirty subjects with a diagnosis of unilateral hemiparesis following a stroke (patient group; mean age 71.2 years, SD=7.0) and 20 age-matched, community-dwelling volunteers without hemiparesis (comparison group; mean age=72.1 years, SD =5.2) participated in the study.

## **Methods**

Postural sway and percentage of body weight (%BW) borne by each extremity were measured in 3 positions: with the heels aligned with each other (aligned position) and in staggered foot positions with either the affected or the unaffected extremity placed forward (affected FW and unaffected FW positions). All subjects were tested in each position with no cane, a standard cane, and a quad cane. The order to tests was randomized, and analysis of data included use of an analysis of variance and adjusted Tukey-Kramer tests.

## **Results**

In both the aligned and the unaffected FW positions, postural sway was reduced only with the quad cane. Both types of canes reduced postural sway in the affected FW position; however, the quad cane had a greater effect. An asymmetrical weight distribution between the lower extremities did not change in the patient group across positions, even with walking aids.

## **Discussion and Conclusion**

A quad cane appears to be more effective than a standard cane in decreasing postural sway in patients with moderate impairment secondary to hemiparesis during stance. The greatest effect on postural sway occurred when the assistive device was contralateral to the foot placed forward. The use of a cane does not appear to adversely affect the asymmetrical weight-bearing pattern during stance that is characteristic of patients with hemiparesis, even when balance is challenged by decreasing the base of support.